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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/670,306	09/26/2003	Ronald Bruno	0918.0216C	5349

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EXAMINER

MEHRA, INDER P

ART UNIT	PAPER NUMBER
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2617

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/27/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/670,306	Applicant(s) BRUNO, RONALD	
	Examiner Inder P. Mehra	Art Unit 2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) 7-17, and 21- 22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 18, 19, 23-25 and 27-43 is/are rejected.
- 7) ☒ Claim(s) 20 and 26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is in response to application dated:09/26/2003. Based on this response, claims 1-6, 18-20 and 23-43 have been elected by the applicant without traverse.

Claim Objections

2. Claim objected to because of the following informalities:

Refer to claim 1 lines 2, 3 , 4 and 5. "the plurality of aircraft" should be —the plurality of aircrafts---. Similar problem exists in claim 7, 12, 15, 18, 21, 23, 28, 29, 30, and 37.

Claim 4 recites, "a count of aircraft", which is not clear as to what it means. Does it mean "number of aircrafts" ?

Claims 23, 30 and 37 are identical. All are system claims. What is the difference between these claims? To avoid redundancy, these should be consolidated.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 20-22 and 26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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Claim 20 recites “pending inbound data requests” in line 4. It lacks antecedent basis, because it is preceded by the limitation in line 3 of claim 20.

Claim 21 recites “a plurality of ground stations” in line 6. It lacks antecedent basis, because it is preceded by the same limitation in line 2 of claim 21.

Claim 21 recites “the signal” in line 7. It lacks antecedent basis, because it is preceded by an incoming signal” in line 6 of claim 21.

Claim 21 recites “the ground stations” in line 8. It lacks antecedent basis, because it is preceded by the a plurality of ground stations” in line 2 of claim 21.

Claim 26 recites “the respective poll response reports”. It does not have antecedent basis. Appropriate correction is required.

Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

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6. Claims 1, 23, 24, 30-31 and 37-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Miller** (US Patent No. 6,477,163) in view of **Admitted Prior art** (See “Description of the Related Art” of instant application), hereinafter, APA, and **Desai et al** (US Patent No. 5,319,374), hereinafter, Desai.

For claims 1, 23, 24, 30-31 and 37-38, reciting limitations “In an air/ground communication environment in which a control site communicates with a plurality of aircraft via a plurality of ground stations, wherein each of the plurality of aircraft is in radio communication with at least one of the plurality of ground stations, (**Miller discloses, “the HF data link radio can be used to transmit and receive voice, tactical, data, and navigational messages between aircraft and ground stations, refer to col. 1 lines 38-41, fig. 1 and col. 3 lines 45-65);**

and the plurality of ground stations and the plurality of aircraft share a common air/ground communication channel, a method of allocating transmission time slots to the plurality of ground stations”, (**Miller discloses, Commercial HF data link radios communicate ATC and AOC messages in accordance with a time division multiplexing scheme, such as, the time division multiplex access (TDMA) protocol defined in Aeronautical Radio, Inc. (Air Inc.) specification 635. The TDMA protocol allows several radios to use a single channel without interference from each other, refer to col. 1 lines 50-56; further, col. 2 lines 46-52);**

a method of allocating transmission time slots to the plurality of ground stations (**Miller discloses “the assignment of slots 44 for transmission”, refer to col. 4 lines 49-53);**

Miller does not disclose the following limitations, which are disclosed by APA, as follows:

- (a) building a transmission time slot schedule containing a transmission time slot allocation for at least one of the plurality of ground stations; (APA discloses, “frame is composed of four 30 msec time slots, and further, discloses, “wherein each channel is defined by a time slot. Like the DSB-AM system it replaces, VDL-3 is a simplex communications standard whereby the ground stations and all the aircraft in a talk group communicate on a common channel (same frequency and time slot). Each of the four VDL-3 channels supported by a single 25 kHz RF carrier is supported by one of the four respective 30-msec time slots that make a 120-msec frame”, refer to page 3 lines 14-18).
- wherein a ground station that receives a time slot allocation assumes management over use of transmission time slots allocated to the ground station by the transmission time slot schedule, (APA discloses, “Fig. 3 illustrates that a control site 302 manages the use of voice slots, but that the ground station 304 manages the utilization of management slots and data slots, refer to page 5 lines 6-7) ;

Miller in view of APA does not disclose the following limitations, which are disclosed by Desai, as follows:

- (b) As recited by claims, 1, distributing the transmission time slot schedule from the control site to at least one of the plurality of ground stations, (Desai discloses, “A sequence of non overlapping time slots is determined (same as building time slots)

that includes substantially all times within a selected time interval. An i th group of these time slots is allocated (same as distribution of time slot scheduling) to vehicle number i , with no two of these groups having one or more time slots in common. An on-board clock provides back-up time if SPS and base station timing signals are both unavailable; on-board clock time is continually corrected by SPS time or base station time, if available. The chosen sequence of timing signals for vehicle number i is then used to determine the times within the i th group of time slots during which that vehicle will transmit selected vehicle operating data, including present vehicle position, to one or more base stations, refer to abstract; Desai further discloses, “transmitting from one or more base stations a sequence of base station timing signals that are received by each vehicle, refer to col. 14 lines 54-56 (this is management over use of transmission time slots).

- As recited by claims 24, 31 and 38, wherein the control site builds a transmission time slot schedule containing a transmission time slot allocation for at least one of the plurality of ground stations and distributes the transmission time slot schedule to at least one of the plurality of ground stations; and wherein a ground station that receives a time slot allocation assumes management over use of transmission time slots allocated to the ground station by the transmission time slot schedule, (Desai discloses, “A sequence of non overlapping time slots is determined (same as building time slots) that includes substantially all times within a selected time interval. An i th group of these time slots is allocated (same as distribution of time slot scheduling) to vehicle number i , with no two of these groups having one or more time slots in common. An on-board clock provides back-up time if SPS and

base station timing signals are both unavailable; on-board clock time is continually corrected by SPS time or base station time, if available. The chosen sequence of timing signals for vehicle number i is then used to determine the times within the ith group of time slots during which that vehicle will transmit selected vehicle operating data, including present vehicle position, to one or more base stations, refer to abstract; Desai further discloses, “transmitting from one or more base stations a sequence of base station timing signals that are received by each vehicle, refer to col. 14 lines 54-56 (this is management over use of transmission time slots).

It would have been obvious to the person of ordinary skill in the art at the time the invention to use the capability of distributing time slots schedule from control site to at least one of the plurality of ground stations, as taught by Desai in his system. The capability can be incorporated into control site. The motivation for using this capability is because there is a need for a channel selection algorithm that does not affect communication on the main channel.

7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Miller** in view of **APA**, and **Desai**, as above; further, in view of **Difonzo et al** (US Pub. No. 2005/0164664), hereinafter, **Diffozo**.

For claim 5, **Miller** in view of **Admitted Prior Art (APA)** and **Desai** disclose all the limitations of subject matter with the exception of the following limitations which are disclosed by **Difonzo**, as follows:

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- “, wherein a count of transmission time slots allocated to one of the plurality of ground stations in the transmission time slot schedule is based, at least in part, upon a volume of communication traffic supported by said one of the plurality of ground stations”, (Difonzo's paragraph 0038).

It would have been obvious to the person of ordinary skill in the art at the time the invention to use the capability of “, wherein a count of transmission time slots allocated to one of the plurality of ground stations in the transmission time slot schedule is based, at least in part, upon a volume of communication traffic supported by said one of the plurality of ground stations, as taught by Difonzo. The capability can be incorporated into control site. The motivation for using this capability is because there is a need for detection and incorporation of new nodes, refer to paragraph 0038 of Difonzo.

8. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Miller** in view of **APA**, and **Desai**, as above; **further, in view of Eriksson et al** (US Pub. No. 2005/0180427), hereinafter, Eriksson.

For claim 6, Miller in view of Admitted Prior Art (APA) and Desai disclose all the limitations of subject matter with the exception of the following limitations which are disclosed by Eriksson, as follows:

- “, wherein the control site periodically rebuilds and redistributes the transmission time slot schedule to at least one of the plurality of ground stations.”, (Eriksson's paragraphs 0011, 0024, 0042 and 0043).

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It would have been obvious to the person of ordinary skill in the art at the time the invention to use the capability of “wherein the control site periodically rebuilds and redistributes the transmission time slot schedule to at least one of the plurality of ground stations”, as taught by Eriksson. The capability can be incorporated into control site. The motivation for using this capability is because there is a need to give a new user a place in the scheduling number is used, refer to paragraph 0024 of Eriksson.

9. Claims 18, 28, 35 and 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Miller** (US Patent No. 6,477,163) in view of **Bishop, Jr. et al.** (US Patent No. 6,078,577), hereinafter, Bishop, and further, in view of **Schlosser et al** (US Patent No. 3,879,581), hereinafter, Schlosser..

For claims 18, 28, 35 and 42, reciting limitations In an air/ground communication environment in which a control site communicates with a plurality of aircraft via a plurality of ground stations, a method of scheduling air to ground data communication from the plurality of aircraft to the control site, (**Miller discloses, “The HF data link radio can be used to transmit and receive voice, tactical, data, and navigational messages between aircraft and ground stations”, refer to col. 1 lines 38-40), the method comprising:**

- (a) receiving at the control site an inbound data slot request from one of the plurality of aircraft via one of the plurality of ground stations(**Miller discloses, “Commercial HF data link radios communicate ATC and AOC messages in accordance with a time division multiplexing scheme, such as, the time division multiplex access (TDMA) protocol defined in Aeronautical Radio, Inc. (Air Inc.) specification 635. The**

TDMA protocol allows several radios to use a single channel without interference from each other”, refer to col. 1 lines 50-56, and col. 2 lines 46-53).

- **(d) transmitting, based upon the assessment, an inbound reservation from the control site to a specific aircraft via one of the plurality of ground stations that identifies a time slot that the aircraft is permitted to use to transmit data to the control site via the plurality of ground stations, (Miller discloses, “The assignment of slots 44 for transmission of squitter messages, transmission of non-squitter messages and reception of non-squitter message can be governed by a variety of control schemes. Further, any method of negotiating time slots 44 and conveying protocol information can be utilized in accordance with the present invention, refer to col.4 lines 49-55) .**

Miller does not disclose explicitly the following limitations, which are disclosed by Bishop as follows:

- **Miller discloses Commercial HF data link radios communicate ATC and AOC messages in accordance with a time division multiplexing scheme, as above, but Bishop discloses more explicitly, (a) “receiving at the control site an inbound data slot request from one of the plurality of aircraft via one of the plurality of ground stations”, (time slot requests, refer to col. 5 lines 1-15 and Gateway control, col. 4 lines 8-11).**
- **(c) As recited by claim 18, assessing at the control site information stored in the information base received in the plurality of inbound data slot requests, (Bishop discloses “If time slots are available, then the system (10) will inform the user (87) and allocate the time slot to the user (87, 305)”, “If there are no available time slots,**

then the system (10) will inform the user (87) that no time slots are available and access to the system's channel is denied, refer to abstract. This is like assessment of situation.).

- **As recited by claims 28, 35 and 42, wherein the control site transmits, based at least in part upon an assessment of the data slot request received, an inbound reservation to a specific aircraft via one of the plurality of ground stations that identifies a time slot that the aircraft is permitted to use to transmit data to the control site via the plurality of ground stations (Bishop discloses “If time slots are available, then the system (10) will inform the user (87) and allocate the time slot to the user (87, 305)”, “If there are no available time slots, then the system (10) will inform the user (87) that no time slots are available and access to the system's channel is denied, refer to abstract. This is like assessment of situation.).**

Miller in view of Bishop does not disclose explicitly the following limitations, which are disclosed by Schlosser as follows:

- (b) storing in an information base at the control site information received in a plurality of inbound data slot requests, refer to col. 23 lines 42-57);

It would have been obvious to the person of ordinary skill in the art at the time the invention to use the capability of storing in an information base at the control site information received in a plurality of inbound data slot requests, as taught by Schlosser in his system. The capability can be incorporated into control site. The motivation for using this capability is

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because there is a need for a channel selection algorithm that does not affect communication on the main channel.

10. Claims 27, 34 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Miller** in view of **Bishop** and **Schlosser**, as above, further, in view of **Tanner et al** (US Patent No. 5, 450,329), hereinafter, **Tanner**, and **Choate** (US Patent No. 5,123,112).

For claims 27, 34 and 41, Miller in view of Bishop and Schlosser discloses all the limitations of subject matter with the exception of the following limitations which are disclosed by Tanner and Choate, as follows:

- wherein the control site receives from at least one of the plurality of ground stations a message that includes at least one of a ground station identifier, a unique aircraft identifier, a unique message identifier, a signal time of arrival (TOA) at the receiving ground station and signal quality information, as determined by the receiving ground station, **(Tanner discloses position information for all aircraft location system---made available to control locations, refer to col. 2 lines 8-12); and**
wherein the control site selects a preferred ground station for use by the control site to transmit signals to or to receive signals from a specific aircraft based upon the information received, **(refer to abstract of Choate, who teaches matching each aircraft with an optimal base station for strongest communication; further, teaches allocation of channels to most effectively use the available radio spectrum among all the aircraft) .**

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It would have been obvious to the person of ordinary skill in the art at the time the invention to use the capability of message that includes at least one of a ground station identifier, a unique aircraft identifier, a unique message identifier, a signal time of arrival (TOA) at the receiving ground station and signal quality information, as determined by the receiving ground station, as taught by Tanner in his system; further, including the capability of selects a preferred ground station for use by the control site to transmit signals to or to receive signals from a specific aircraft based upon the information received, as taught by Choate. The capability can be incorporated into control site. The motivation for using this capability is because there is a need for improvement of current system and increasing air to ground traffic

Allowable Subject Matter

REASONS FOR ALLOWANCE

11. Claims 2-4, 19-20, 25-26, 29, 32-33, 36, 39-40 and 43 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Prior Art of Record

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. **Pierzga et al** (US Pub. No. 2003/0084451), discloses method and system for providing an audio/video in-route entertainment system.

Conclusion

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13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Inder P. Mehra whose telephone number is 571-272-3170. The examiner can normally be reached on Monday through Friday from 8AM to 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Feild can be reached on 571-272-4090. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Inder Pal Mehra 4/18/07
Inder P Mehra
Examiner
Art Unit 2617


ERIKA A. GARY
PRIMARY EXAMINER